

## METHODS AND APPARATUS FOR MASS FINGERPRINTING OF BIOMOLECULES

### ABSTRACT

5           Methods and apparatus that determine molecules in a sample by mass  
fingerprinting are disclosed. In one embodiment, the method comprises: (1) comparing  
the mass signals of a mass spectrum to a biomolecule fragment signal list to determine  
mass signal-biomolecule fragment matches; (2) quantifying the mass signal-biomolecule  
fragment match significance based on a biomolecule fragment detection parameter; (3)  
10   quantifying a biomolecule's likelihood of being present in the sample based on the  
quantified significance of mass signal-biomolecule fragment matches; and (4)  
determining the likelihood of the presence of biomolecule(s) in the sample by comparison  
of the quantified biomolecule presence likelihood. The invention also provides an  
apparatus for determining the likelihood of the presence of a biomolecule in a sample  
15   using the biomolecule fragment detection parameters of biomolecule fragments matched  
to the mass signals of a mass spectrum of the sample.

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